P/V Northern Victor
Udagak Bay
Unalaska Island, Alaska
June 2008
Dive Survey

By Magone Marine Service, Inc.

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Dive Survey Performed For:

Icicle Seafoods, Inc.
4019 21st Ave West
Seattle, WA 98199

M/V Northern Victor – NPDES Permit # AK-005286-8
Udagak Bay
Unalaska Island, AK
Latitude: 53° 44.062'
Longitude: 166° 19.476'

By:

Magone Marine Service, Inc.
PO Box 920247
Dutch Harbor, AK 99692

Phone: (907) 581-1400
Fax: (907) 581-1495
Email: Magone@arctic.net

Reported by:

Dan Magone
(Print)

(Sign)

Date: 8/4/08

Executive Summary

Study Description:

Based upon our visual observation from the dive survey, performed in the winter of '07, Bone Pile B was characterized as an irregular series of piles and ridges resulting from the original Northern Victor waste pile being deposited at different places relevant to the movement of the processing ship and its moorings. The current survey is following our effort to plow the large area of thinly deposited bones toward the main pile to minimize the total area that the bones are effecting the seafloor. The basis for this survey is the December 2007 survey which was strictly based upon the Tier 3 Survey Model described on page 34 of the Alaska General NPDES Permit #AK-G52-0000. The Pile B area calculation in this survey began with the pile as shown in the earlier survey (page 9). Area calculations for this survey are based on measurements taken from the scaled drawing (page 11) redrawn with a virtual perimeter on the eastern side of the pile.

Conclusions:

The controls used in this survey provide a relatively accurate means to quantify the area being measured; however, the outer boundary itself is a bit subjective. The actual volume given in the report is assumed to be the same as the December 2007 Survey and may not present an accurate representation of the actual fish bone pile volume due to its irregular features; the actual volume would no-doubt be less than that represented in the survey method and calculations used. However the obvious results from our plowing operation show the eastern ½ of the deposit area has been cleaned of all but trace bones up to the main pile thus creating a more definitive boundary on that side.

During this survey a relatively small amount of soft white tissue was noted. This could have been dredged up by the plow or it may be some fish skin generated at this site. Otherwise only old unground fish bones were observed.

Water Quality Problems Identified:

No water quality problems were observed. During the time of this survey, the Northern Victor was not on site and therefore not processing. The water column was clear and did not appear to be affected by previous processing operations.

Recommended Improvements for Subsequent Monitoring:

Since the pile area has been substantially reduced, it would be good to spend some extra time studying the western or unplowed side of the pile to get an even more accurate picture of the remaining pile and coordinates could be adjusted if need be.

Methodology

Surveyor Information

Surveyor:
Magone Marine Service, Inc.
PO Box 920247
Dutch Harbor, AK 99692
Phone: (907) 581-1400
Fax: (907) 581-1495
Email: dmagone@arctic.net

Dates of Survey

Between the dates of 06/06/08 and 06/07/08

Number of Dives: 8

Divers:

Daniel L. Magone
James A. Parnell
Jeff Daniels
Stephen Schrader

Equipment Used in Survey:

GPS (Model) Garmin GPS Map 76CSX

Dive Equipment:

- Surface supplied diving equipment per standard of the commercial industry, with umbilicals to 600 ft.
- Underwater video equipment.
- OSHA approved double lock recompression chamber.

Communication Equipment:

- Two way radio connected to divers helmet via umbilical and monitored by topside dive tender.
- VHF Radios with skiff operators.

Other Equipment Used:

- Skiff was used to place marker buoys.

Description of Methodology

Plowing operations to minimize the footprint of Bone Pile B wre completed on June 1st 2008. This survey commenced on June 6th allowing time for any turbidity to clear.

The first step was to place anchored marker buoys on the GPS coordinates of our pile outline established in December of 2007. Our dive vessel Western Viking then moved to anchor north of the pile center with a long stern line run to the west mooring buoy. The divers on surface supplied gear were towed on the surface with the skiff over to the marker buoys which they would descend. Once on the bottom they would pick up the anchor and move toward the pile center as directed from the surface personnel. When significant amounts of bone were encountered the anchor would be left to mark the new perimeter coordinate. As the new coordinates were established they were recorded with a hand held GPS in the skiff.

Due to wind and current and the distance to the mooring buoys Western Viking was not able to hold position adequately for the divers to operate efficiently therefore we utilized our salvage vessel Redeemer with her multiple anchors to hold Western Viking in position to complete the diving.

Because the west buoy mooring chains obstructed plowing from the west side of the pile the west side coordinates remained unchanged.

Results

Estimated Area of Deposit: See drawing on page 10
The irregular shape of the new pile B footprint was not conducive to simple area calculations without modifications as shown on page 10. Modifications consisted of drawing an arc connecting the north and south ends of the pile. This line becomes the new ***virtual*** easterly perimeter and creates three irregular shapes A, B and C. Shapes A and C though not part of the new pile as shown on page 9, are now assumed to be part of the modified drawing of the pile on page 10 and B is assumed to be excluded from the modified drawing of the pile. The justification for inclusion of A and C and exclusion of B is that Area (A) + Area (C) is greater than or equal to Area (B). In other words we have included more area than we excluded. Agreeing with that premise allows redrawing the pile in a shape that easily lends itself to an area calculation.

Using the scale shown in the lower right corner the new maximum length and width were measured and calculated as shown below.

Maximum Width:

Max width was measured at 2 in.

$$2.0 \text{ in.} * \frac{1 \text{ ft}}{12 \text{ in}} * \frac{100 \text{ ft}}{1.25 \text{ in}} * \frac{12 \text{ in}}{1 \text{ ft}} = \textbf{Max Width = 160 feet}$$

Maximum Length of Deposit:

Max length was measured at 4 9/16 in. = 4.5625 in.

$$4.5625 \text{ in.} * \frac{1 \text{ ft}}{12 \text{ in}} * \frac{100 \text{ ft}}{1.25 \text{ in}} * \frac{12 \text{ in}}{1 \text{ ft}} = \textbf{Max Length = 365 feet}$$

?

Area Calculation

Thickness

Area of Deposit = ((Length x Width) x 0.67) = ft² (1 Acre = 43,560 ft²)

160 * 365 * 0.67 = 39,128 sq ft. Area of Deposit = $\frac{39,128}{43,560}$ = 0.90 acres

Estimated Volume of Deposit (Pile B)

The volume of the reduced footprint is assumed to be the same as in previous survey.

Marine Life Observed – Over, On, Above or Within 100 Feet

Large Fishes	Sculpin	Sole	Greenling
Invertebrates	Starfish	Anemones	Snails
Kelp/Plants	None		

(See Appendix B for Detail)

Appendix A – Maps & Diagrams

The Bathymetry of Sea Floor

The sea floor is relatively flat with a downward grade from the NW limit of the pile approximately 100' deep to the SE limit at approximately 107' deep.

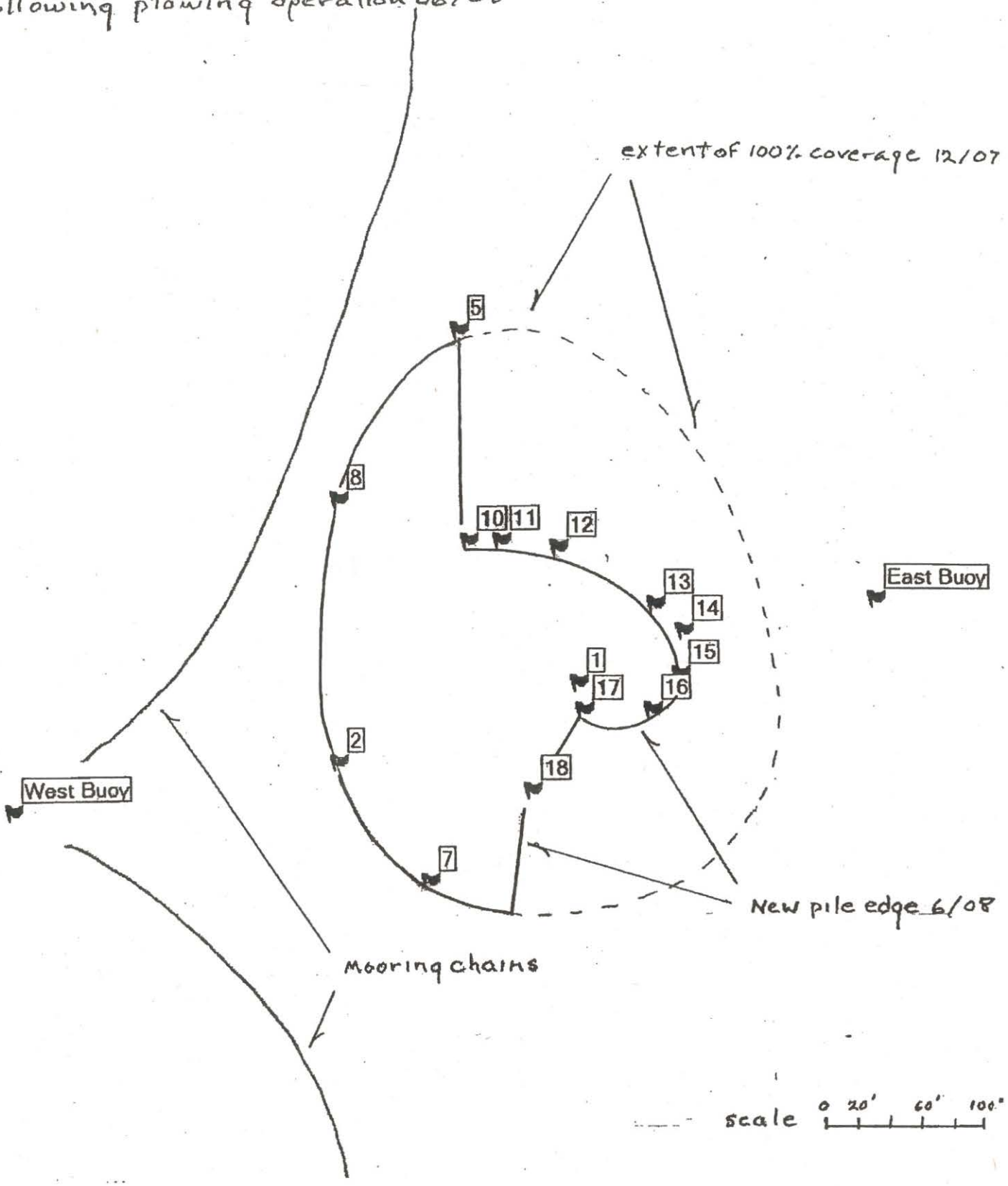
Scaled diagram of Deposit showing former Pile "B" perimeter.

See Map – page 9

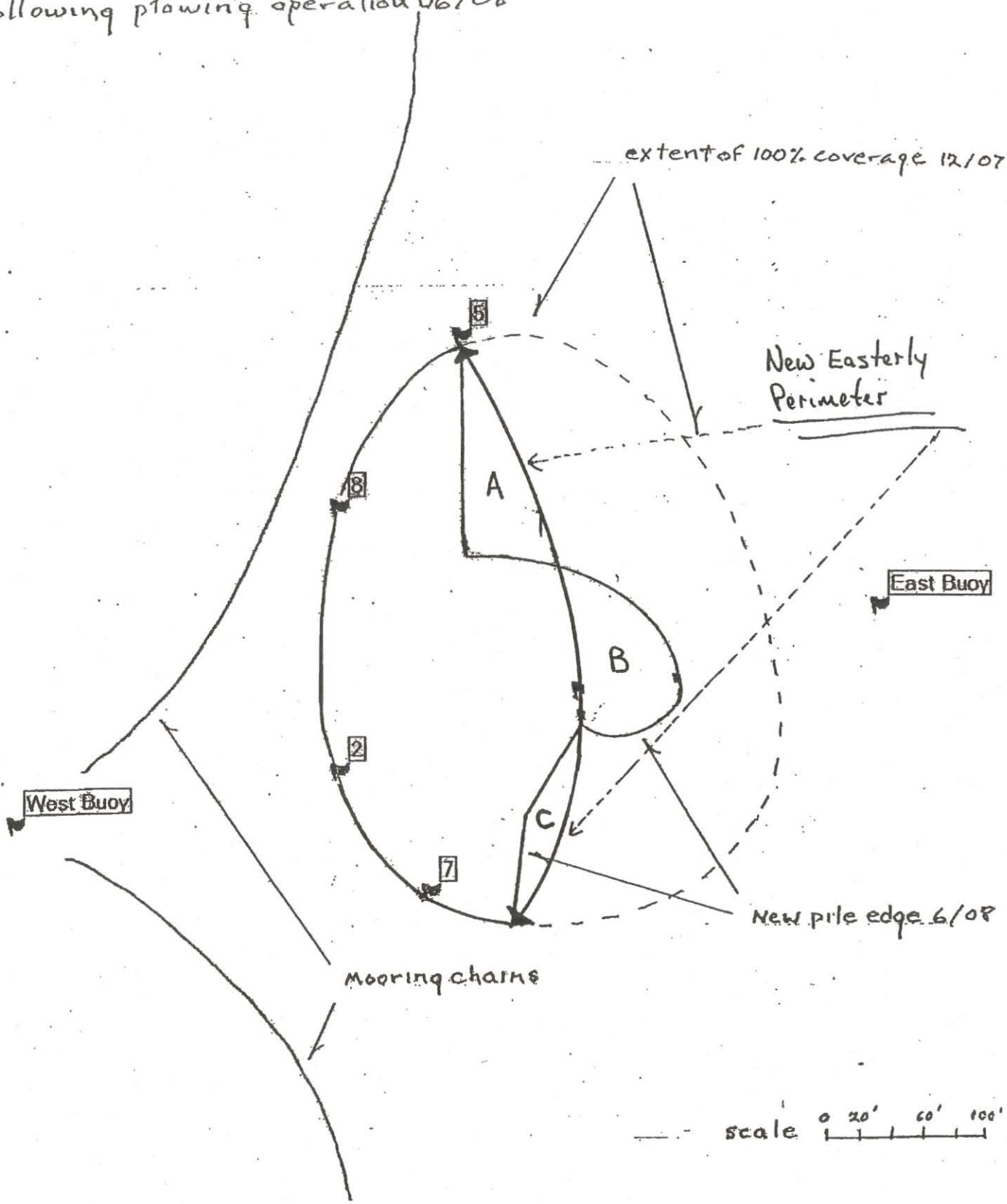
Scaled diagram of Deposit with Perimeter redrawn to facilitate estimation of area.

See Map – page 10

Northern Victor "[illegible]ne pile #3"
Dive Survey results
Following plowing operation 06/08



Northern Victor "Prone pile #3"
Dive Survey result.
Following plowing operation 06/08



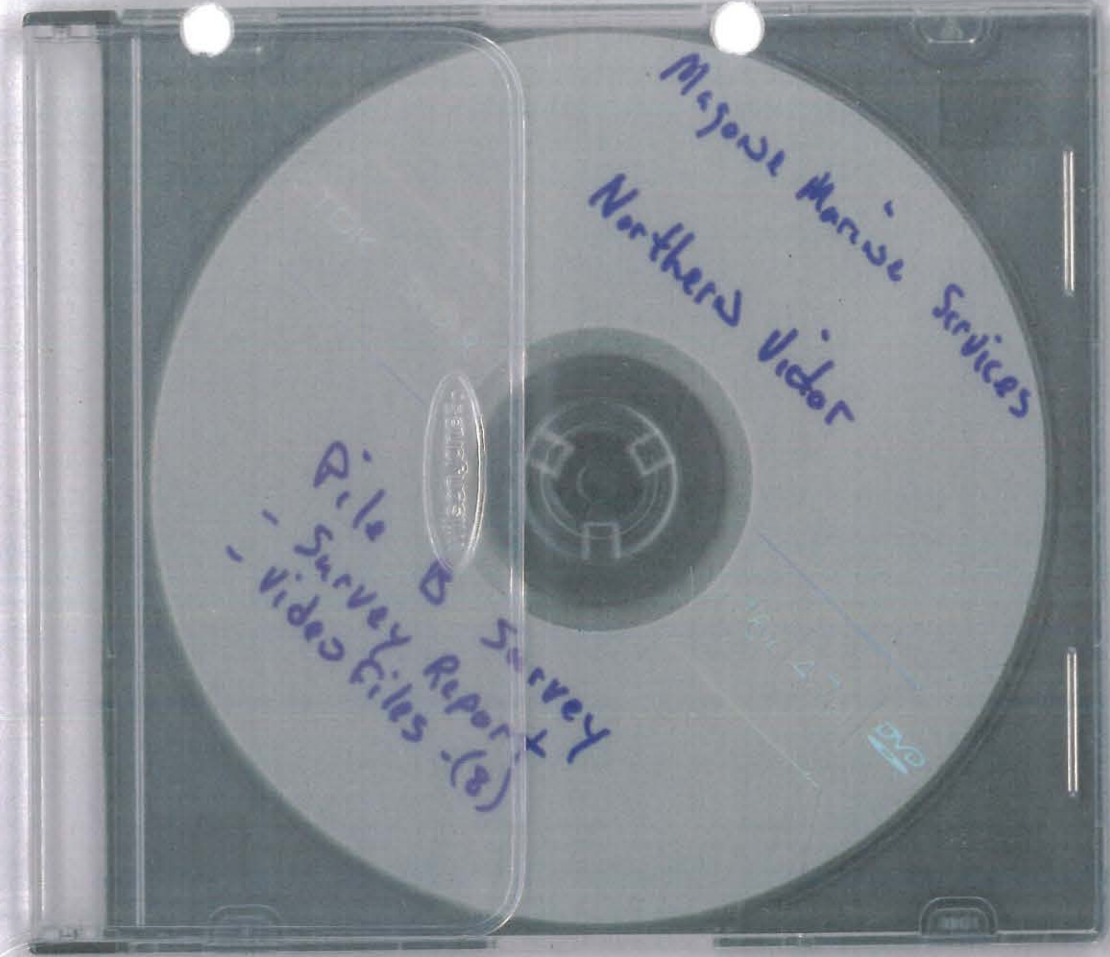
Appendix B – Photographs/Video

Explanation of Video

The underwater video shows the divers descending the marker buoy lines, picking up the kedge anchor and moving in the direction of the pile. The condition of the plowed seafloor can be seen after it has settled for 5 days with only trace bones visible until near the main pile. On reaching the pile the divers move along the edge with the marker buoy anchor until instructed by topside that proper spacing is achieved at which point they drop that anchor and move to the next anchor.

The most evident forms of sea life are the starfish, sculpin and sole. It can be seen that marine debris other than fish bones for the most part have been plowed to the pile as well since very little industrial trash can be seen in the area that was plowed until reaching the new edge of the pile.

Also seen in the video are white flimsy shards of soft material that are 3 to 5 inches long and may be pieces of fish skin or some other durable tissue that was either dug up by the plow or spilled from recent processing operations. There is not a lot of this material but it is evident in areas of the video.


Magone Marine Services
Northern Victor
Pile B Survey
- Survey Report
- Video files - (8)